Harry L. Arnold Jr. MD Case of the Month

CT Demonstration of a Pancreatic Duct Stricture and Obstructive Pancreatitis with ERCP and Intraoperative Correlation

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We describe a case of a pancreatic duct stricture in a young female resulting in chronic intermittent obstructive pancreatitis, and requiring repeated hospitalizations over a ten year period. The stricture was identified by computed tomographic (CT) scan and endoscopic retrograde cholangio-pancreatography (ERCP) and noted to be in the distal pancreatic duct. The patient was treated successfully with distal pancreatectomy. This case report illustrates the utility of CT scanning and ERCP in determining the etiology of pancreatitis. When a stricture is identified, these studies give anatomic detail that aid in intra-operative decision making.

Key words: Pancreatitis, obstructive—Pancreas, CT—Pancreas, US—Pancreas, ERCP—Pancreas, stricture.

Case report

A 26-year-old Micronesian female presented to the general surgery service at Tripler Army Medical Center, Honolulu, Hawaii with a ten year history of intermittent pancreatitis. This was manifest by epigastric abdominal pain, nausea, vomiting, and hyperamylasemia. She had been managed successfully with conservative therapy on multiple previous admissions to her local hospital. The patient had no medications during this time period, and had no history of alcohol use, trauma, or hyperlipidemia.

At the time of referral to our institution, the patient was asymptomatic. Physical exam was unremarkable. Laboratory exam revealed an amylase of 63 U/L, a lipase of 104 U/L, normal liver enzymes and total bilirubin, a normal arterial blood gas, a calcium of 8.5 mg/dl, and a white blood cell count of 8,100.

The patient was initially evaluated with a right upper quadrant ultrasound which was normal. This was followed by an ERCP. The pancreaticogram demonstrated a focal pancreatic duct stricture in the mid-body of the pancreas with dilatation of the duct distal to the stricture. Subsequently, a helical CT scan of the pancreas was obtained with 3 mm collimation and a pitch of 1.5. Contrast was demonstrated within the biliary system and pancreatic duct. An acute focal narrowing of the distal portion of the pancreatic duct was noted, with no contrast seen distal to this point (figure 1). This corresponded directly to the isolated stricture seen on ERCP. The classic chain of lakes appearance of the pancreatic duct and pancreatic calcifications were absent. Given the location of the stricture, the patient underwent distal pancreatectomy and splenectomy. She had an uneventful recovery and was discharged home on postoperative day nine. She remained pain free at the last evaluation, 6 months postoperatively.

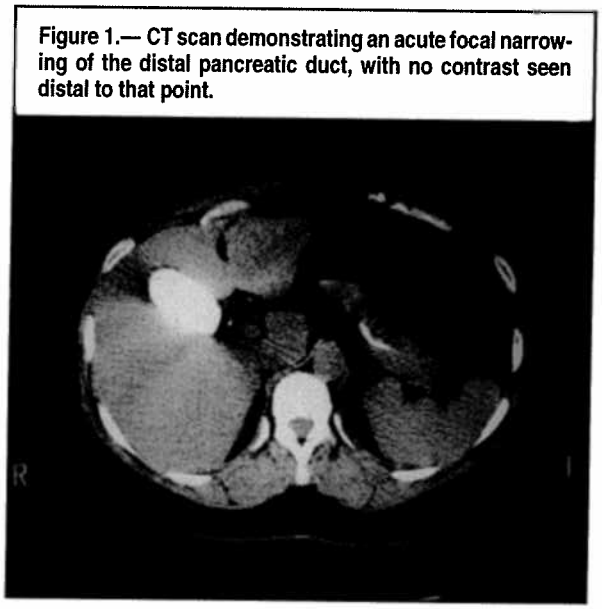


Figure 1.— CT scan demonstrating an acute focal narrowing of the distal pancreatic duct, with no contrast seen distal to that point.

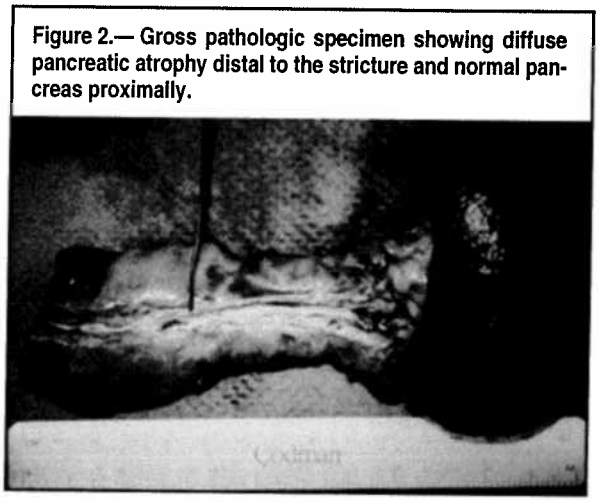


Figure 2.— Gross pathologic specimen showing diffuse pancreatic atrophy distal to the stricture and normal pancreas proximally.

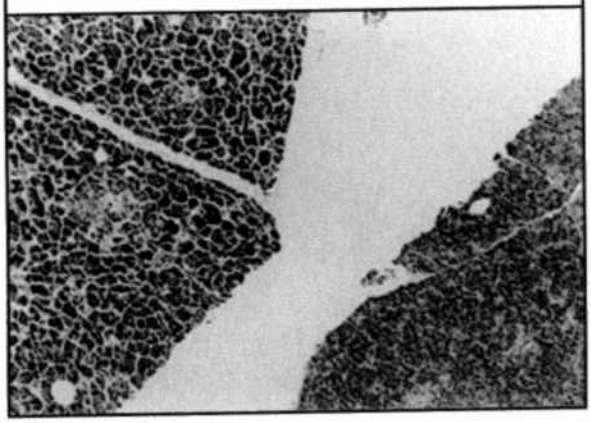
Pathologic examination of our patient's pancreas revealed microscopic and gross changes consistent with obstructive pancreatitis. On gross examination (figure 2), the pancreas distal to the stricture was shrunken, firm and fibrotic in appearance. Microscopically, the pancreas distal the stricture showed diffuse pancreatic atrophy (figure 3). Inflammatory cells were not prominent, nor were any calcifications, inspissated secretions, or saponification identified. Proximal to the stricture, the pancreas was normal.

Discussion

Obstructive pancreatitis is an unusual form of chronic pancreatitis and represents only 5% of cases.[1] This case report demonstrates a classic example. History and physical examination and laboratory examination generally offer few clues. Usually, radiographic evaluation using ultrasound, ERCP, and CT scan are required to elucidate the etiology of pancreatitis. Obstruction may be caused by tumors, inflammation, congenital anomalies, and strictures from previous injury.[1,2] The clinical presentation of obstructive pancreatitis resembles other forms of chronic pancreatitis, but differs both radiographically and patho-logically.

Patchy atrophy of exocrine tissue characterizes nonobstructive

Figure 3.— Histologic specimen stained with hematoxylin and eosin demonstrating the sharp cutoff between normal and fibrotic, atrophied pancreas (100x magnification).



pancreatitis, whereas, diffuse atrophy in the pancreatic tissue distal to the obstruction is more common in obstructive pancreatitis.[1,3] Protein plugs within the pancreatic duct are also frequently found.

The optimal surgical approach to obstructive pancreatitis has not been studied extensively, but distal pancreatectomy appears to be the best choice.[4] Since pathologic changes manifest themselves distal to the pancreatic duct stricture, distal pancreatectomy is the procedure of choice to deal with this problem. Nonobstructive forms of chronic pancreatitis affect the pancreas and the pancreatic duct more diffusely and are managed more appropriately with larger resections or side-to-side pancreaticoenterostomies. It is, therefore, imperative to obtain preoperative anatomic and morphologic information on the pancreas to determine the most likely form of chronic pancreatitis involved, and thus, the optimal surgical approach.

Right upper quadrant ultrasound to rule out cholelithiasis or choledocholithiasis followed by ERCP and then CT scanning is a logical radiologic approach to this disease process. The need for ultrasound and ERCP seems obvious. However, the addition of CT scanning provides valuable information about pancreatic parenchymal morphology. The CT scan in our patient was largely unremarkable except for the stricture. CT scanning may show, however, alternating areas of stenosis and dilation (the "chain of lakes"), as well as calcifications in nonobstructive pancreatitis. Uniform dilation of the pancreatic duct distal to the stricture without a chain of lakes appearance or calcifications, however, distinguishes obstructive pancreatitis from nonobstructive forms of pancreatitis on CT scan and ERCP.

This case underscores the need for a complete preoperative radiologic workup to include ultrasound, ERCP, and then CT scan to determine the most likely form of chronic pancreatitis involved and, therefore, the best operative approach. We believe that in cases of obstructive pancreatitis, distal pancreatectomy is the optimal surgical procedure.

References

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